

WHAT IS CLAIMED IS:

1. A liquid discharge head, comprising:

liquid chambers for housing liquid;

a piezoelectric element configured so that a plurality of layers including a
5 piezoelectric layer, an electrode layer and a diaphragm layer are laminated, the
piezoelectric element being deformed to a laminating direction so that a capacity of the
liquid chambers is reduced and discharging the liquid in the liquid chambers; and

a liquid chamber member made of an electroless plating material provided on one
side of the piezoelectric element in the laminating direction, the liquid chamber member
10 having liquid chamber holes for composing the liquid chambers opened on a side of the
piezoelectric element and a surface opposite to the piezoelectric element,

wherein at least a part on the surface of the piezoelectric element on the side of
the liquid chamber member is composed of a nucleus forming assistance material
contained layer containing a material for assisting nucleus forming for growth of plating at
15 the time of forming the liquid chamber member on the surface by means of the electroless
plating.

2. The liquid discharge head of Claim 1, wherein the nucleus forming assistance
material contained layer is patterned correspondingly to a position of the liquid chamber
member other than the liquid chamber holes.

20 3. The liquid discharge head of Claim 1, wherein the material for assisting the
nucleus forming is metal having catalysis with respect to reduction reaction of the plating
material.

4. The liquid discharge head of Claim 3, wherein:

the plating material is Ni, and

25 the metal having catalysis with respect to the reduction reaction of the plating

material is at least one selected from a group of Ni, Fe and Pd.

5. The liquid discharge head of Claim 1, wherein the material for assisting the nucleus forming is the metal having larger ionization tendency than the plating material.

6. The liquid discharge head of Claim 5, wherein:

5 the plating material is Ni, and

the metal having the larger ionization tendency than the plating material is at least one selected from a group of Ti, Mg, Al and Zn.

7. The liquid discharge head of Claim 1, wherein the entire surface of the piezoelectric element on the side of the liquid chamber member is composed of the nucleus
10 forming assistance material contained layer.

8. The liquid discharge head of Claim 7, wherein:

the diaphragm layer contains the material for assisting the nucleus forming, and

the diaphragm layer serves also as the nucleus forming assistance material contained layer.

15 9. A method for manufacturing a liquid discharge head, the liquid discharge head having liquid chambers for housing liquid, and a piezoelectric element configured so that a plurality of layers including a piezoelectric layer, an electrode layer and a diaphragm layer are laminated, the piezoelectric element being deformed to a laminating direction so that a capacity of the liquid chambers is reduced and discharging the liquid in the liquid
20 chambers, the manufacturing method comprising:

the laminate forming step of laminating at least the piezoelectric layer, the electrode layer and the diaphragm layer so as to form a laminate on a substrate;

the liquid chamber member forming step of forming a liquid chamber member on a surface of the laminate opposite to the substrate by means of electroless plating, the
25 liquid chamber member having liquid chamber holes for composing the liquid chambers

being opened on a side of the laminate and a surface opposite to the laminate; and

the substrate removing step of removing the substrate after the liquid chamber member forming step.

10. The method for manufacturing the liquid discharge head of Claim 9, wherein
5 the liquid chamber member forming step includes:

the mold forming step of forming molds which are patterned correspondingly to a position of the liquid chamber holes of the liquid chamber member on the surface of the laminate opposite to the substrate;

the side wall forming step of forming a side wall of the liquid chamber holes on
10 the liquid chamber member on a portion on the surface of the laminate opposite to the substrate where the molds do not exist by means of electroless plating; and

the liquid chamber hole forming step of removing the molds after the side wall forming step so as to form the liquid chamber holes.

11. The method for manufacturing the liquid discharge head of Claim 10, wherein
15 at the mold forming step, the molds are formed by photosensitive resist.

12. The method for manufacturing the liquid discharge head of Claim 10, wherein:

after the mold forming step, a nucleus forming assistance material contained layer containing a material for assisting nucleus forming for growth of the plating at the time of
20 forming the liquid chamber member by means of the electroless plating is formed on a portion on the surface of the laminate opposite to the substrate where the molds do not exist, and

at the side wall forming step, the side wall of the liquid chamber holes are formed on the nucleus forming assistance material contained layer by the electroless plating.

25 13. The method for manufacturing the liquid discharge head of Claim 12,

wherein the material for assisting the nucleus forming is metal having catalysis with respect to reduction reaction of a plating material.

14. The method for manufacturing the liquid discharge head of Claim 13, wherein:

5 the plating material is Ni, and

 the metal having catalysis with respect to the reduction reaction of the plating material is at least one selected from a group of Ni, Fe and Pd.

15. The method for manufacturing the liquid discharge head of Claim 12, wherein the material for assisting the nucleus forming is metal having larger ionization tendency
10 than the plating material.

16. The method for manufacturing the liquid discharge head of Claim 15, wherein:

 the plating material is Ni, and

 the metal having larger ionization tendency than the plating material is at least one
15 selected from a group of Ti, Mg, Al and Zn.

17. The method for manufacturing the liquid discharge head of Claim 9, wherein:

 at the laminate forming step, the entire surface of the laminate opposite to the substrate is composed of a nucleus forming assistance material contained layer containing a material for assisting nucleus forming for growth of the plating at the time of forming the
20 liquid chamber member by means of the electroless plating, and

 at the liquid chamber forming step, the liquid chamber member is formed on the surface of the laminate opposite to the substrate by the electroless plating.

18. The method for manufacturing the liquid discharge head of Claim 17, wherein at the laminate forming step, the entire surface of the laminate opposite to the substrate is
25 composed of the diaphragm layer which contains the material for assisting the nucleus

forming so as to serve also as the nucleus forming assistance material contained layer.